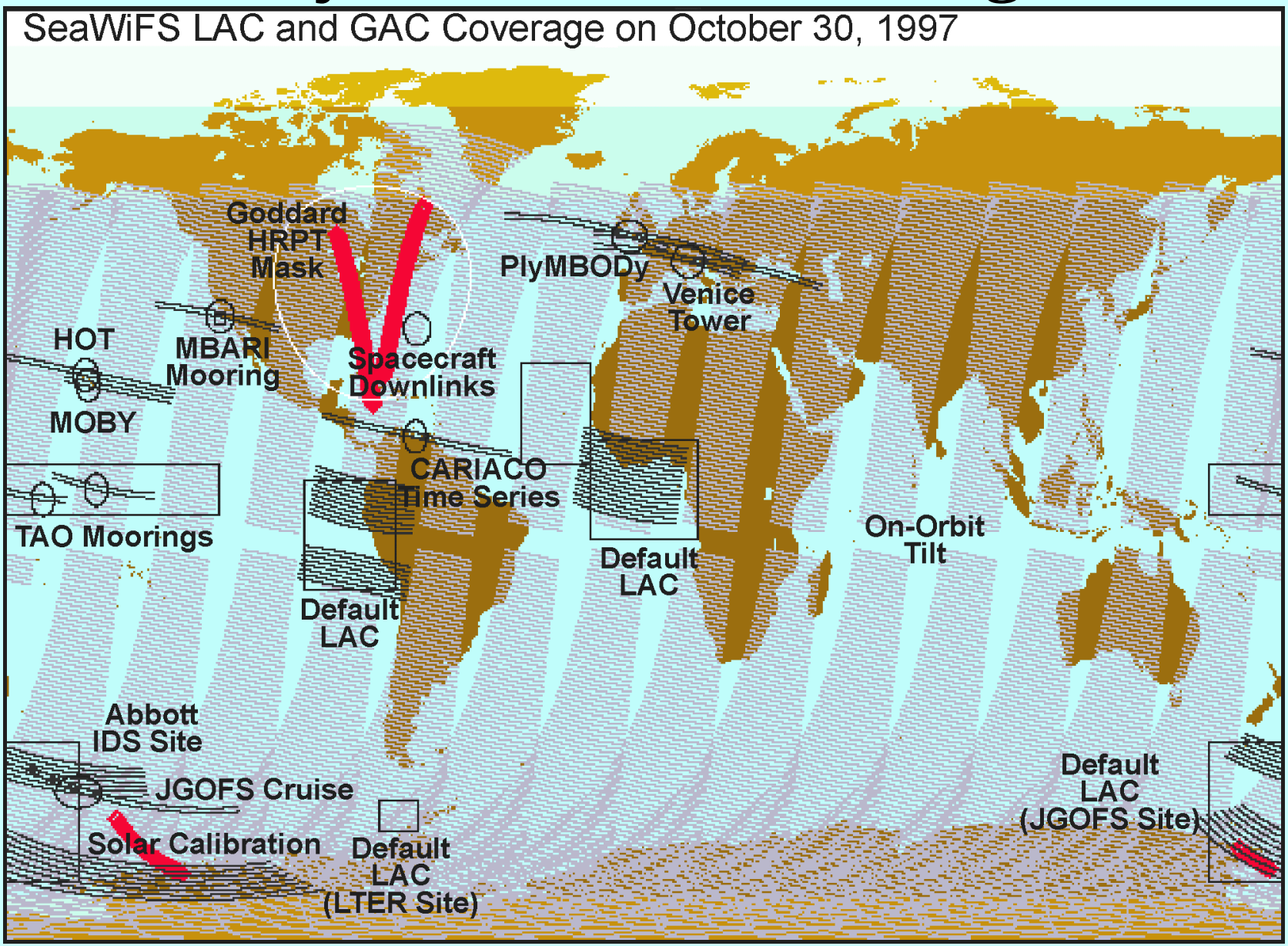
SeaWiFS Update with Terrestrial and Atmospheric Applications

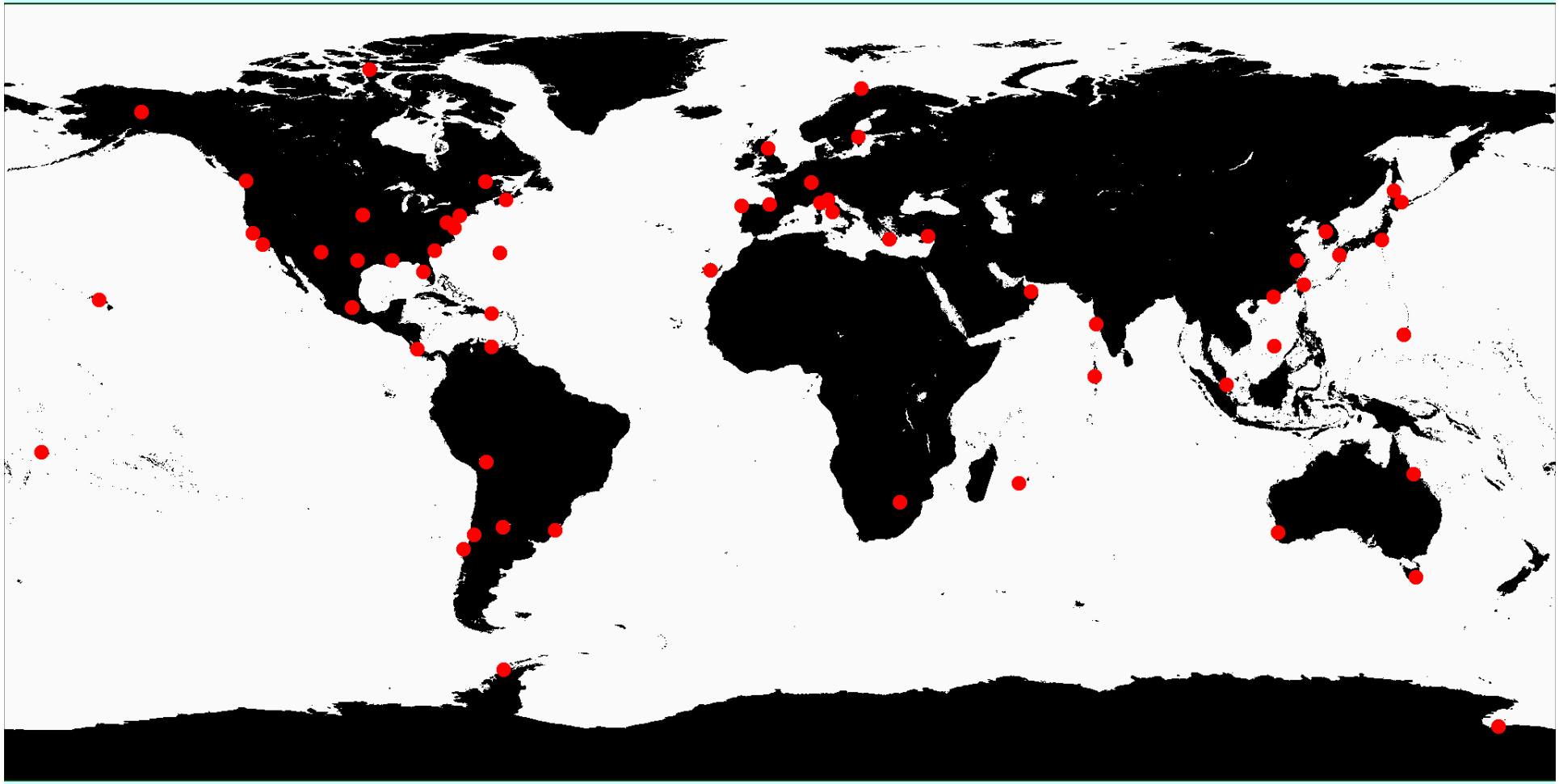
Charles McClain

and the SeaWiFS Project Team

Daily Onboard LAC Targets

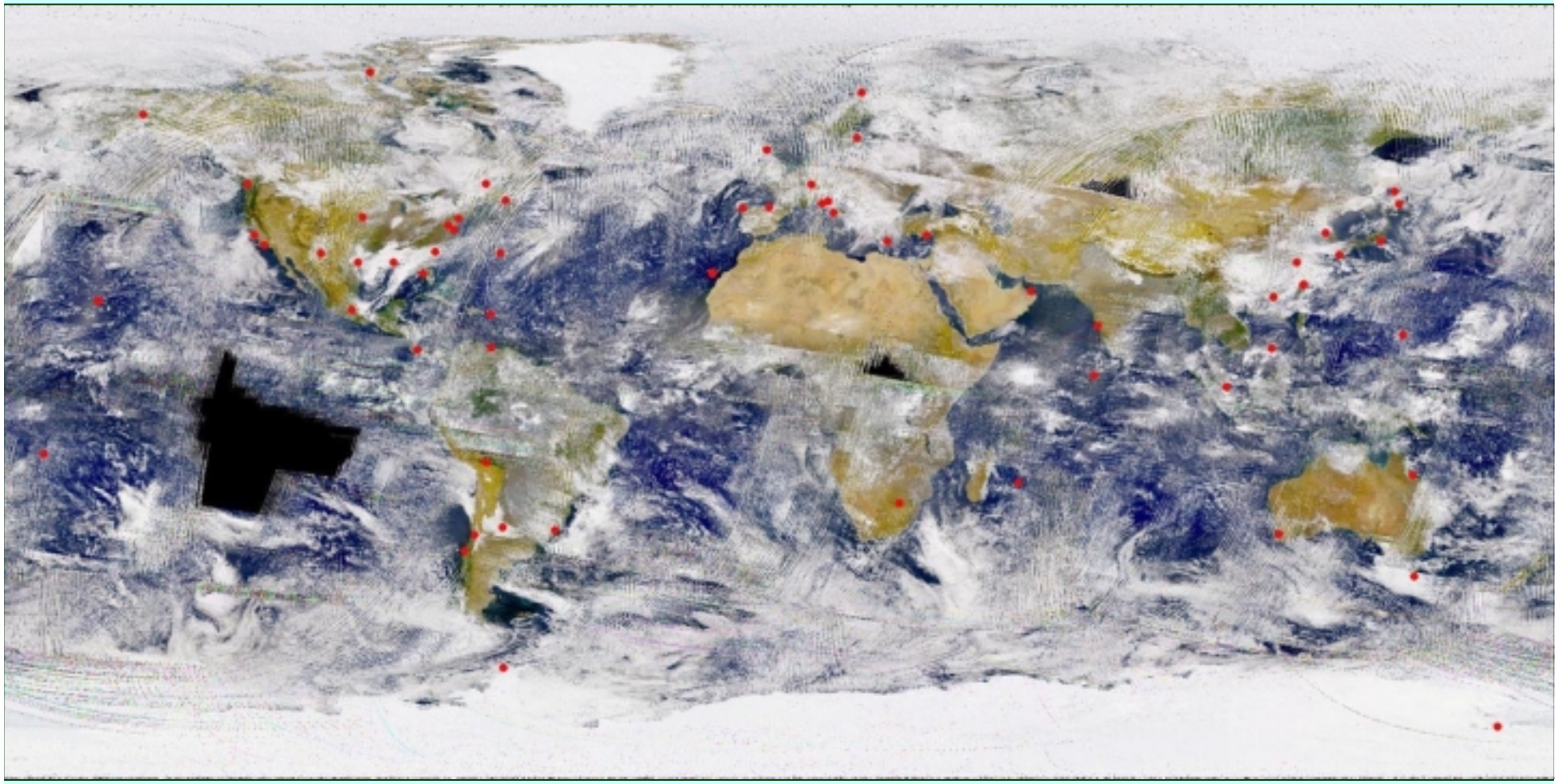


HRPT Station Locations



SeaWiFS High Resolution Ground Station Network
Total of 71 stations to date

Potential HRPT Coverage



SeaWiFS High Resolution Ground Station Network
36,816 files collected from 71 stations
2.4 terabytes Archived at NASA/GSFC
12 October 1999

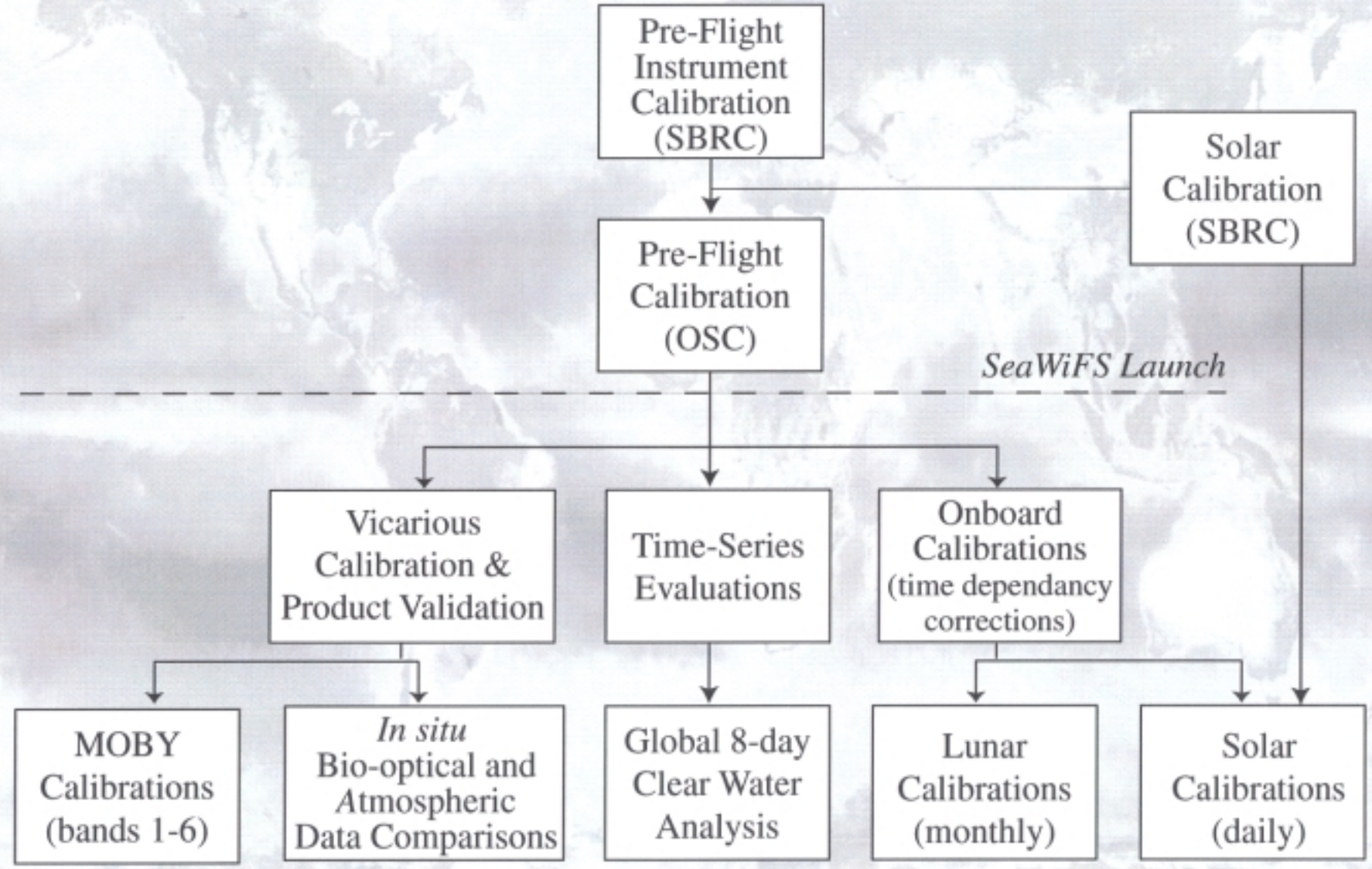
SeaWiFS Project Status

- Continuous routine operations since 9/18/97
  - No serious S/C anomalies to date
  - All systems healthy
  - Over 1200 Authorized Users registered at the GSFC/DAAC
    - Ratio of data volume distributed to data volume received ~ 9:1
- Routine lunar and solar calibrations executed
- Marine Optical Buoy (MOBY) operational since July 1997
  - Vicarious calibration procedures established
- Reprocessings completed in February & September 1998
  - Reprocessing analysis posted on SeaWiFS web site (What's New)
  - Preparations underway for third reprocessing
    - Problems with negative Lw's in coastal regions and high latitudes
    - level 1, 2, & 3 processing code rewritten
  - Annual reprocessings planned
- "Evaluation products " routinely generated starting in 2000

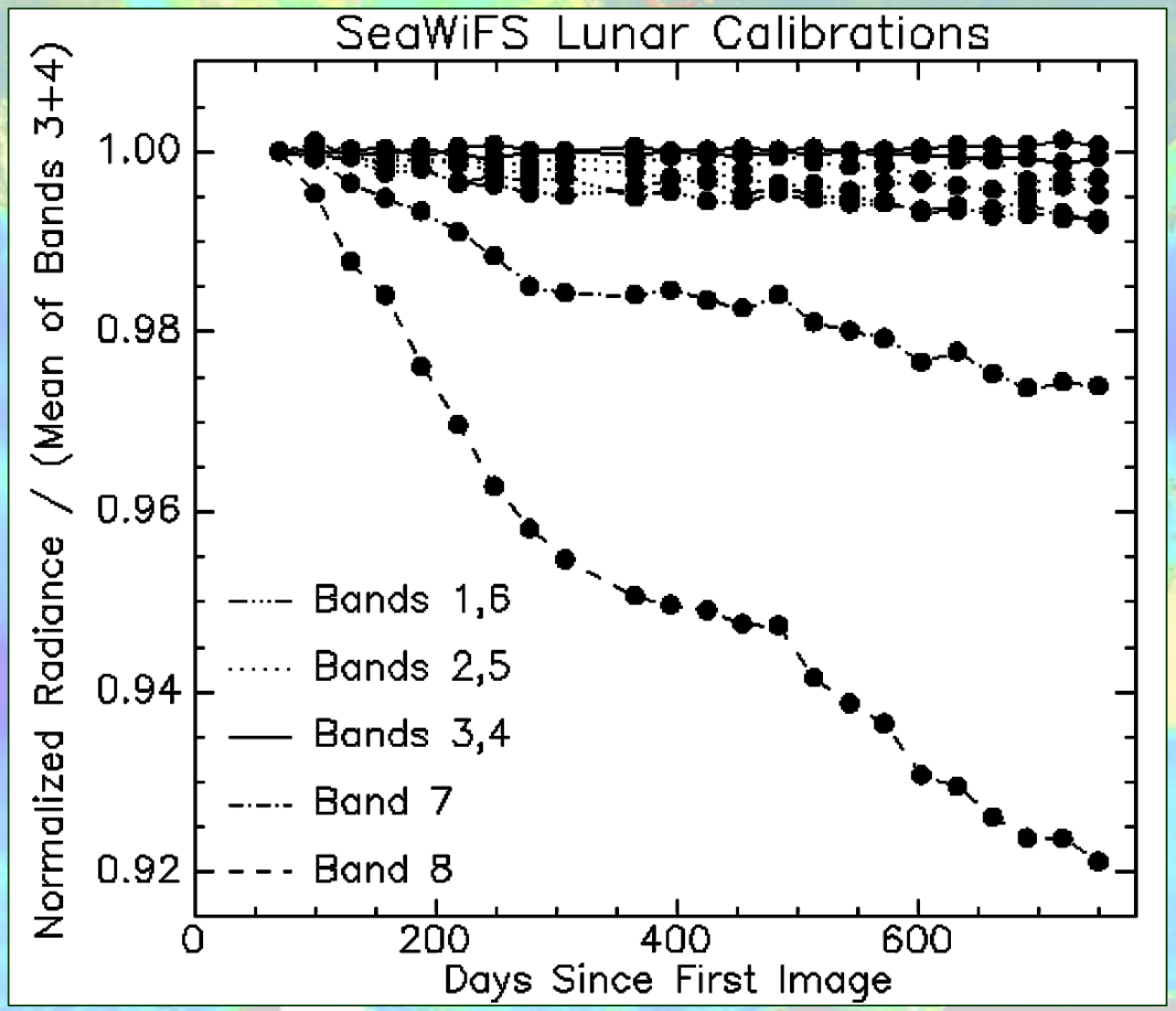
SeaWiFS Project Status *(continued)*

- SeaDAS (SeaWiFS Data Analysis System)
  - Version 3.2 released in late August, 1998
    - CZCS processing support
    - 277 sites in 32 countries using Version 3.2
  - Version 3.3 (released April 16, 1999)
    - OCTS processing module update
    - Additional CZCS processing capabilities
    - MOS processing added (September)
    - 310 sites (43% US; 44% foreign; 13% undetermined)
  - LINUX version completed (May, 1999)
  - Future Enhancements
    - MODIS Oceans Product display (completed)
    - POLDER processing (under development by SIMBIOS Project)
    - Variable Level-3 binning resolution

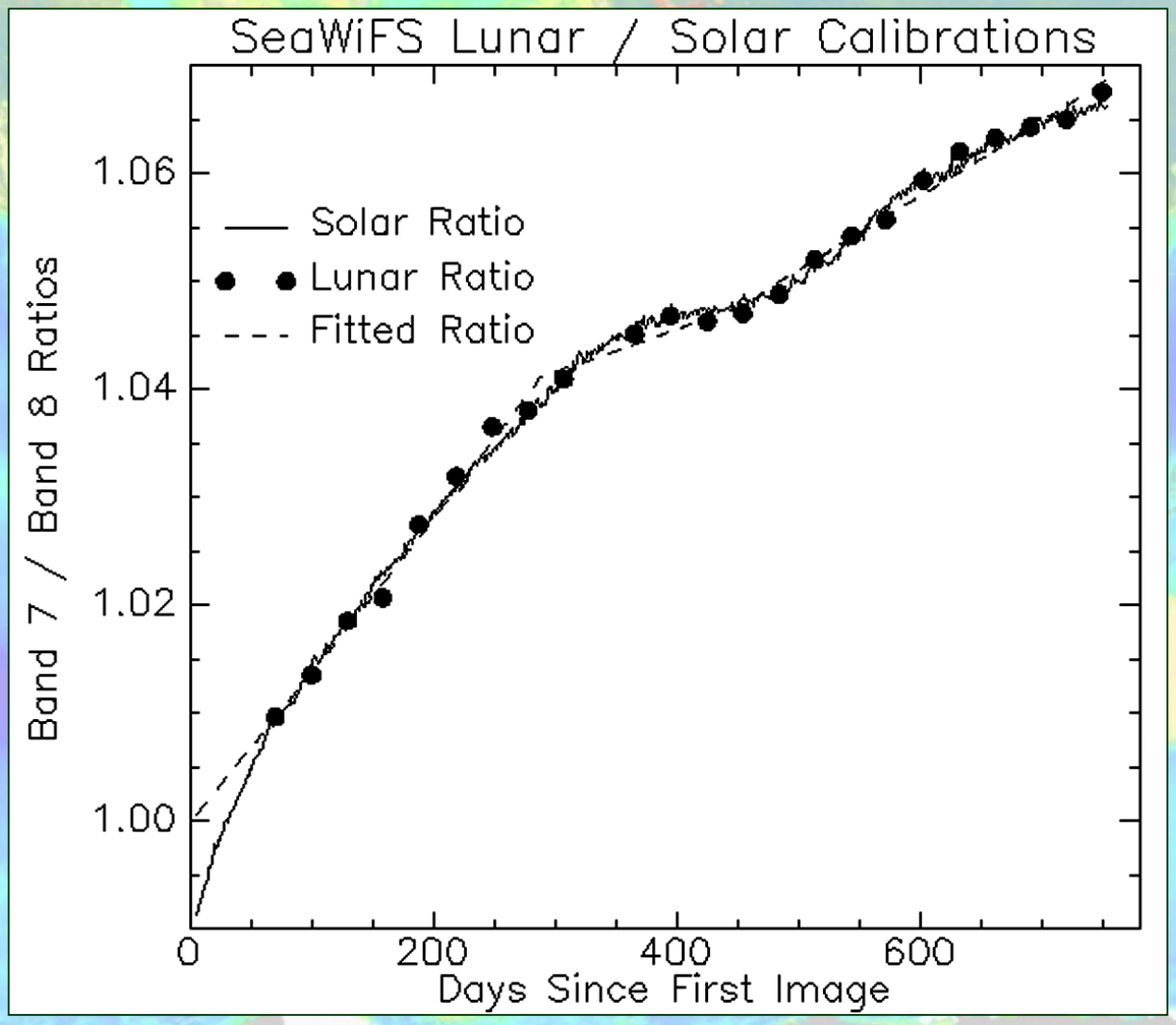
SeaWiFS Calibration and Validation Process



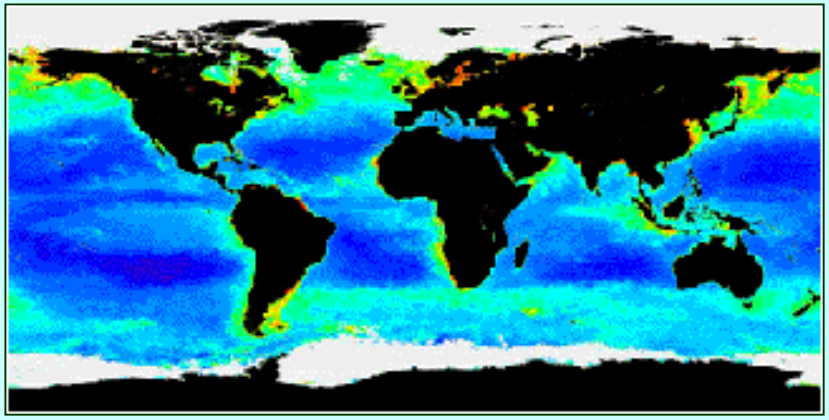
Lunar Calibration Time Series



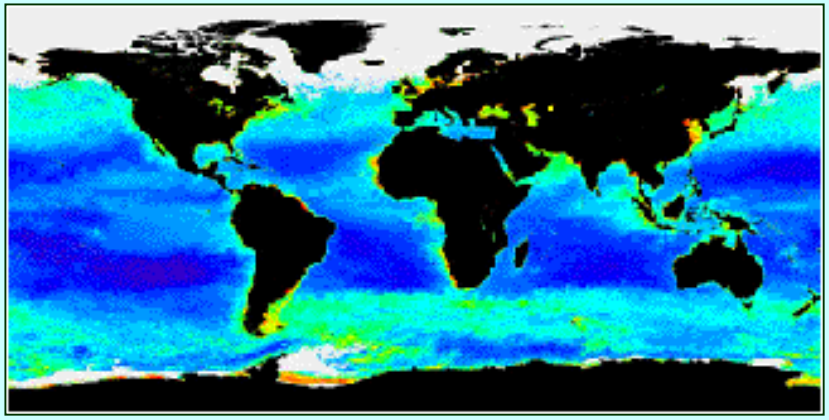
Lunar and Solar Calibration Time Series



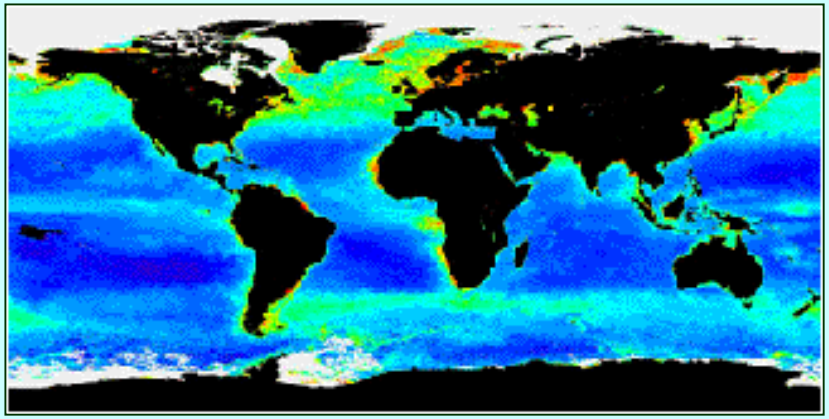
SeaWiFS Seasonal Chlorophyll Composites



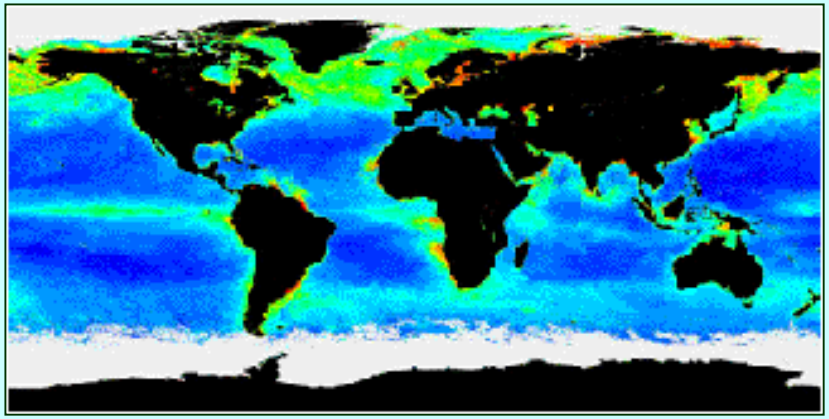
September 1997 - November 1997



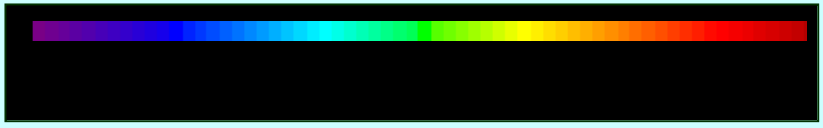
December 1997 - February 1998



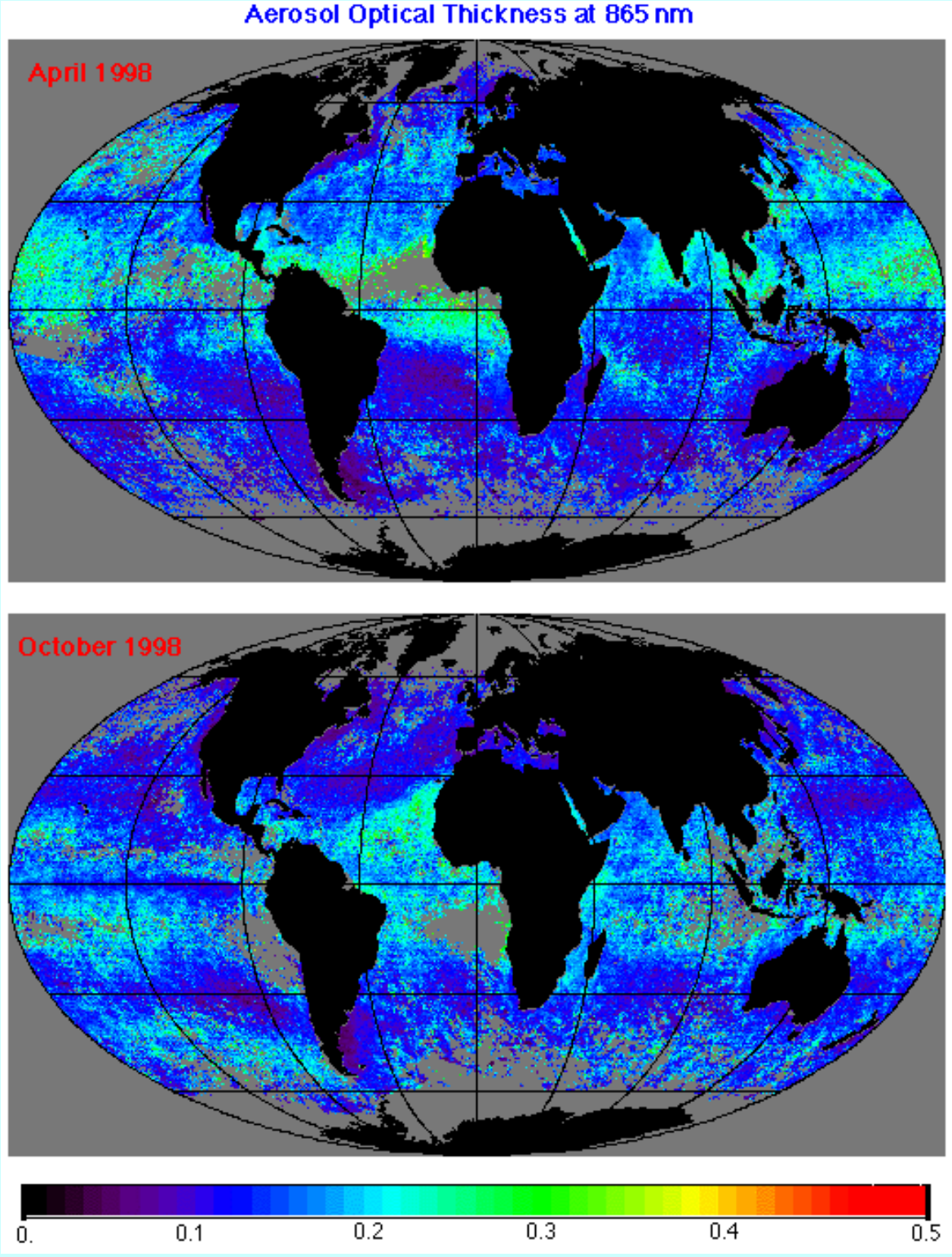
March 1998 - May 1998



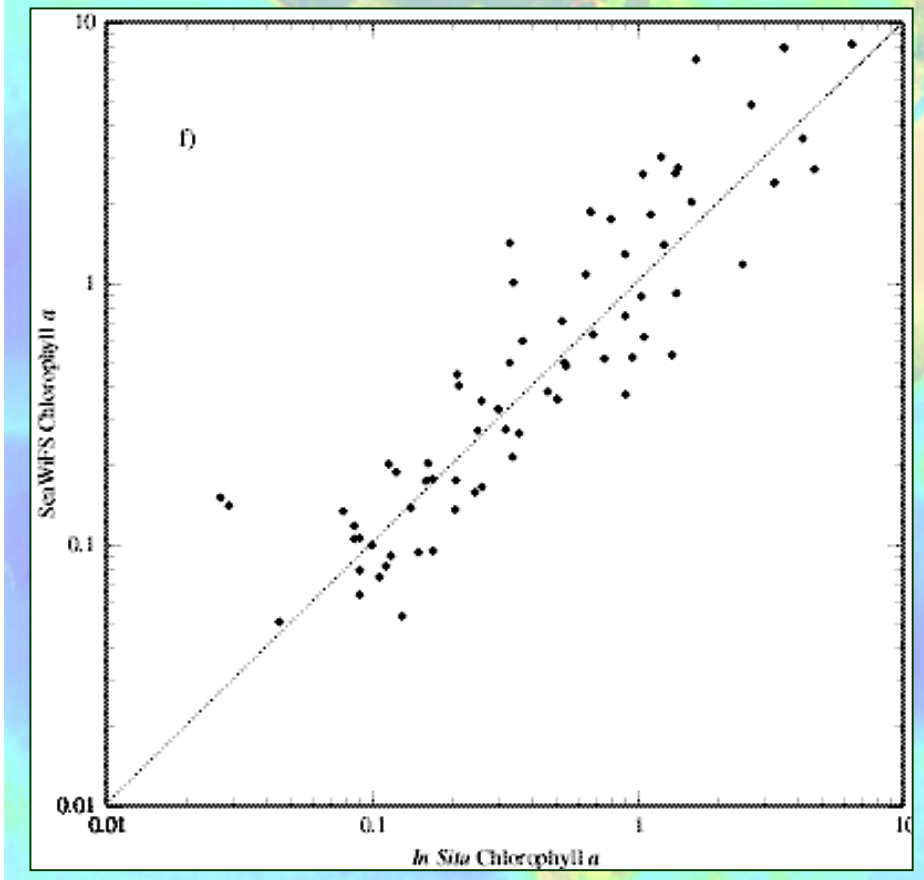
June 1998 - August 1998

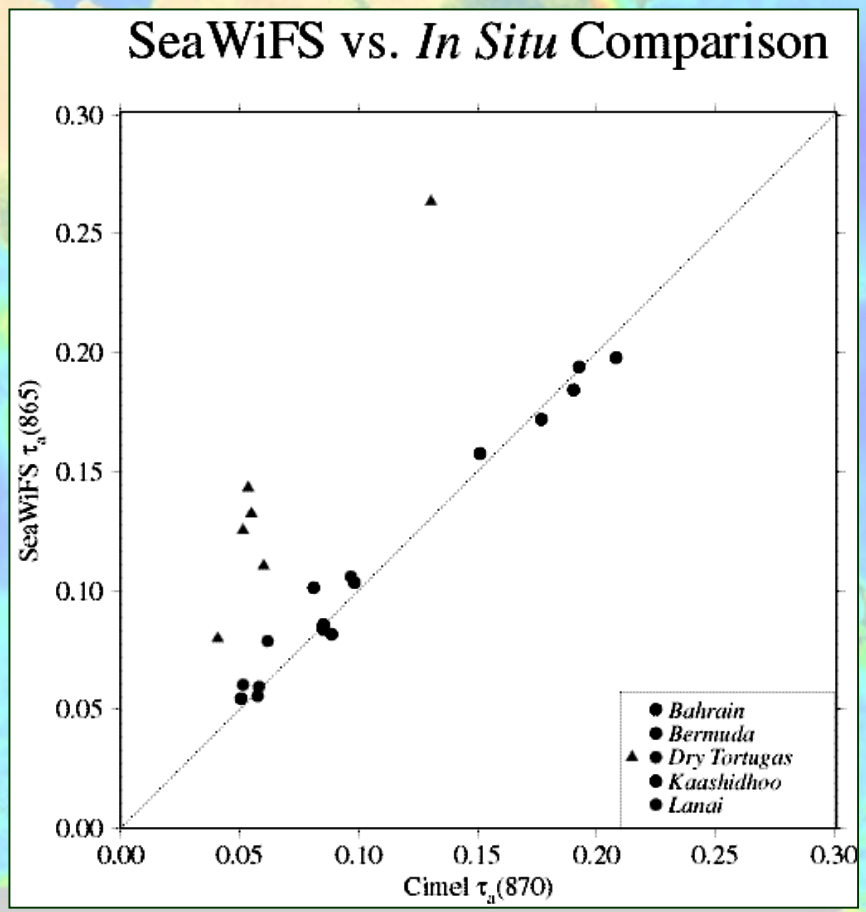


Aerosol Optical Thickness: Global Monthly Composites



Chlorophyll-a and Aerosol Optical Thickness Match-up Analysis

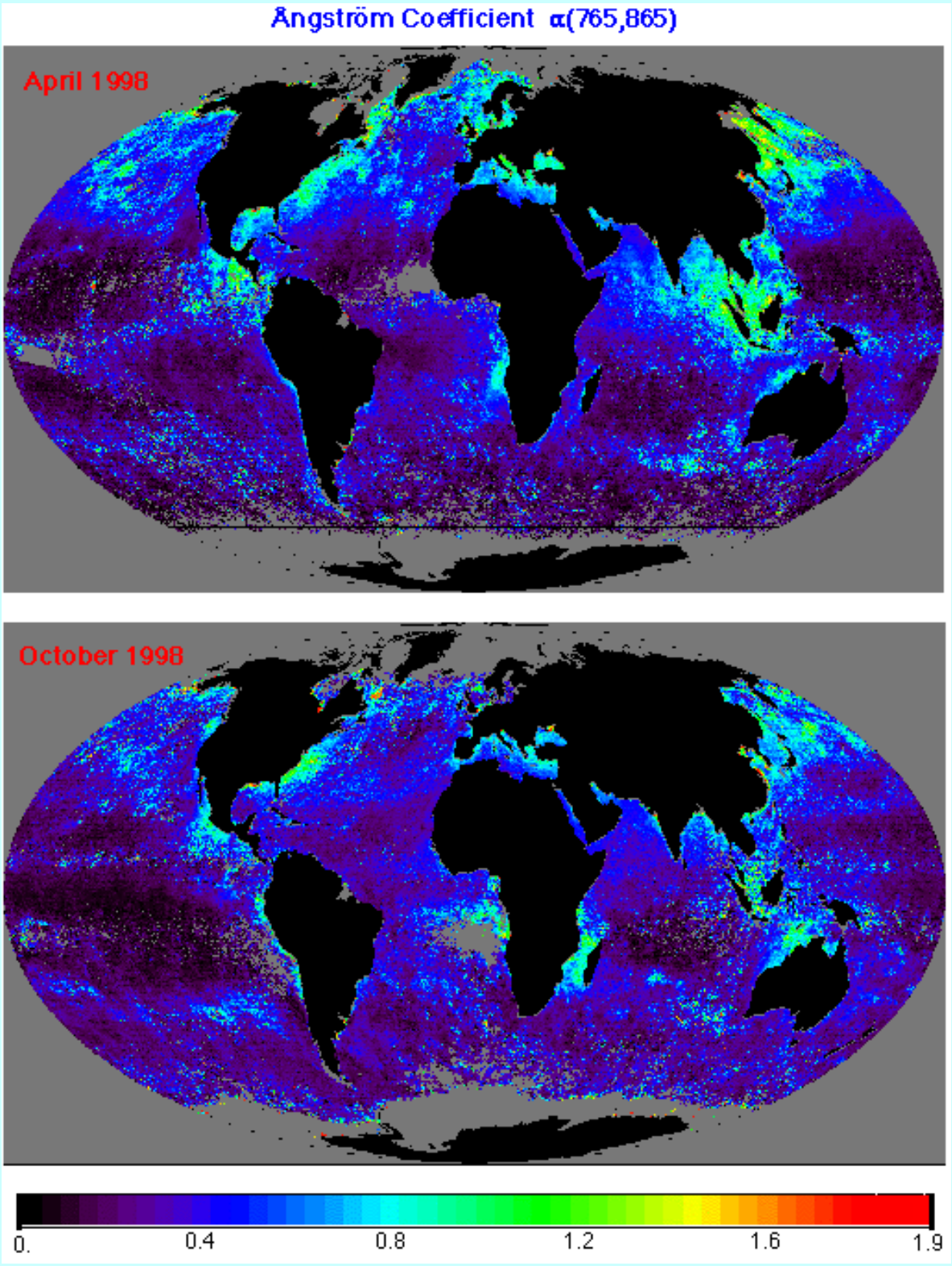




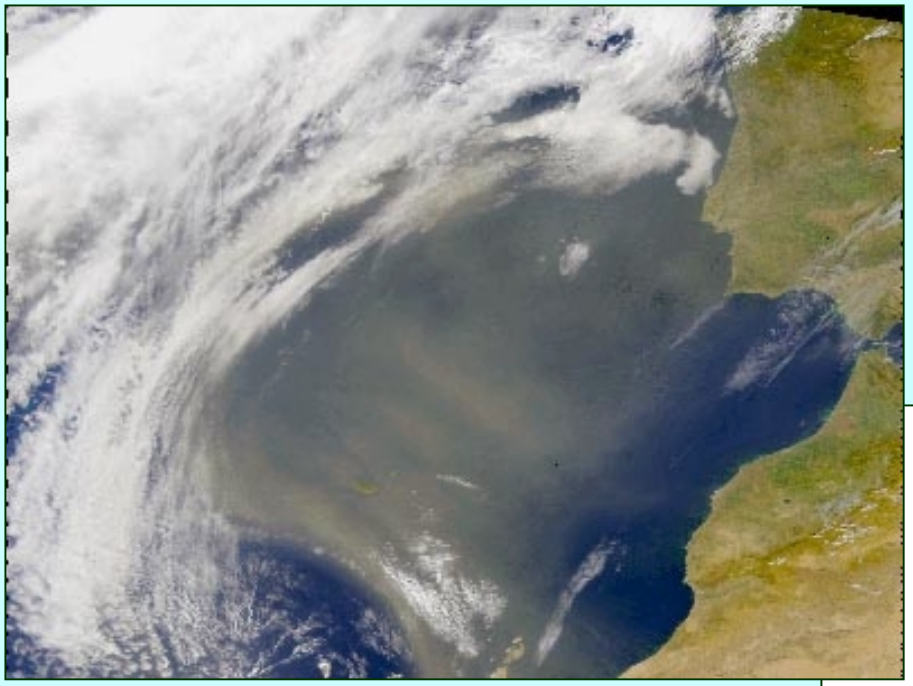
Product Generation Strategy

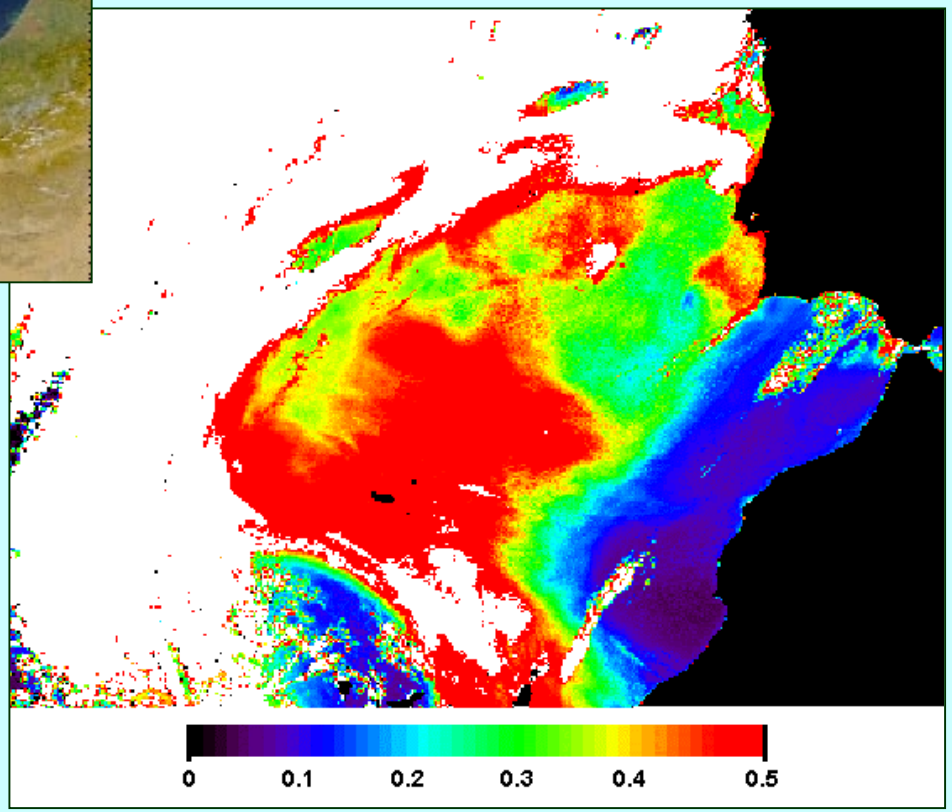
- Archive Products: Reprocessing # 3 changes
  - Add Lwn(670): level-2 & -3
  - Add Angstrom exponent: level-2 & -3
- Evaluation Products
  - Generated in parallel with Archive Products
    - Products on-line within SeaWiFS Project with rolling update
    - Browse system in place
  - Seek partners for algorithm development & quality control (terrestrial and atmospheric products)
  - Suggested products to date
    - Land: NDVI (ongoing collaboration with J. Tucker)
    - Ocean: coccolithophore distributions, trichodesmium distributions
    - Atmosphere: cloud fraction, smoke index, absorbing aerosol index, cloud optical thickness, daily average PAR

Angstrom Exponent: Global Monthly Composite

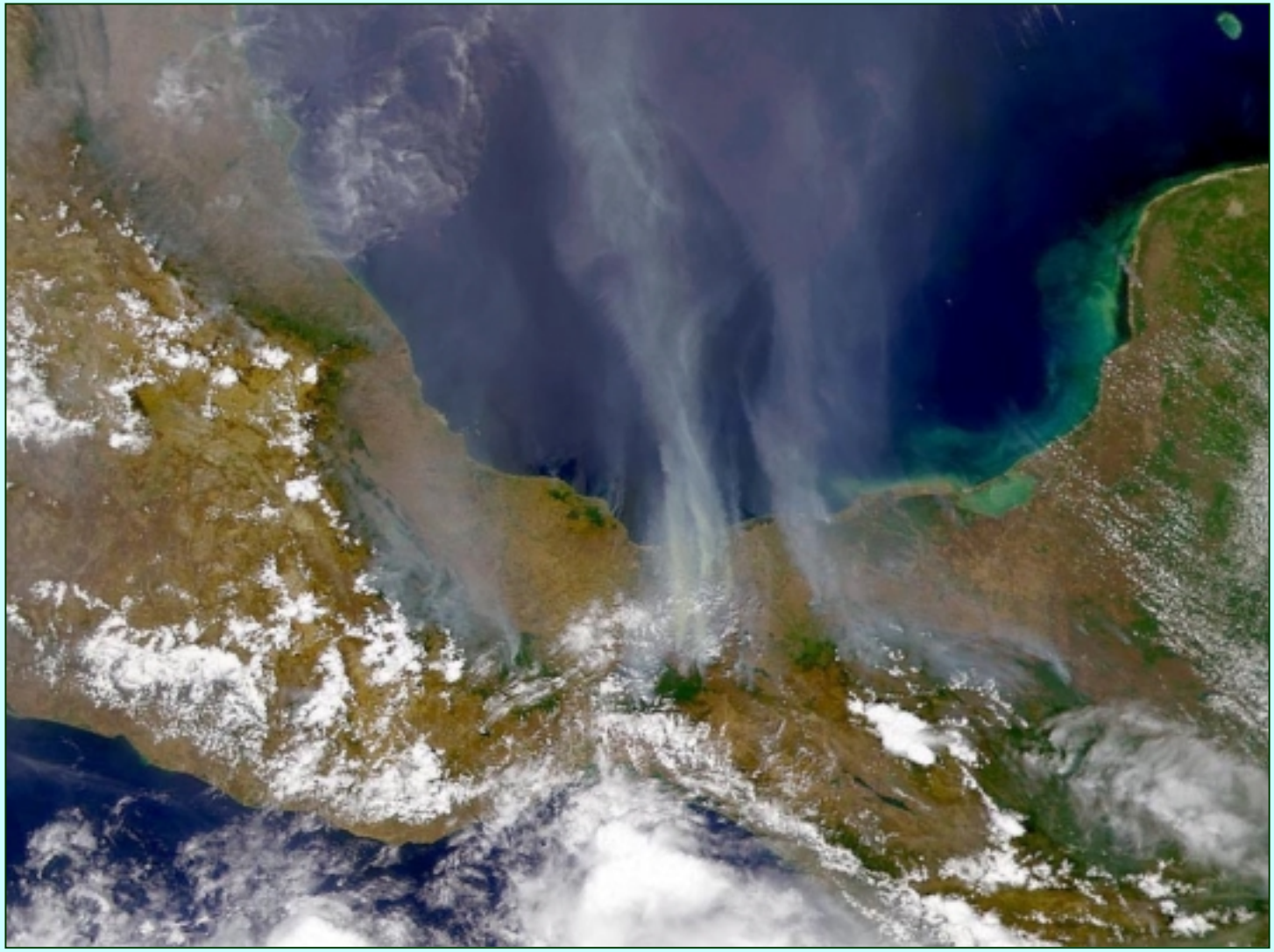


Saharan Dust



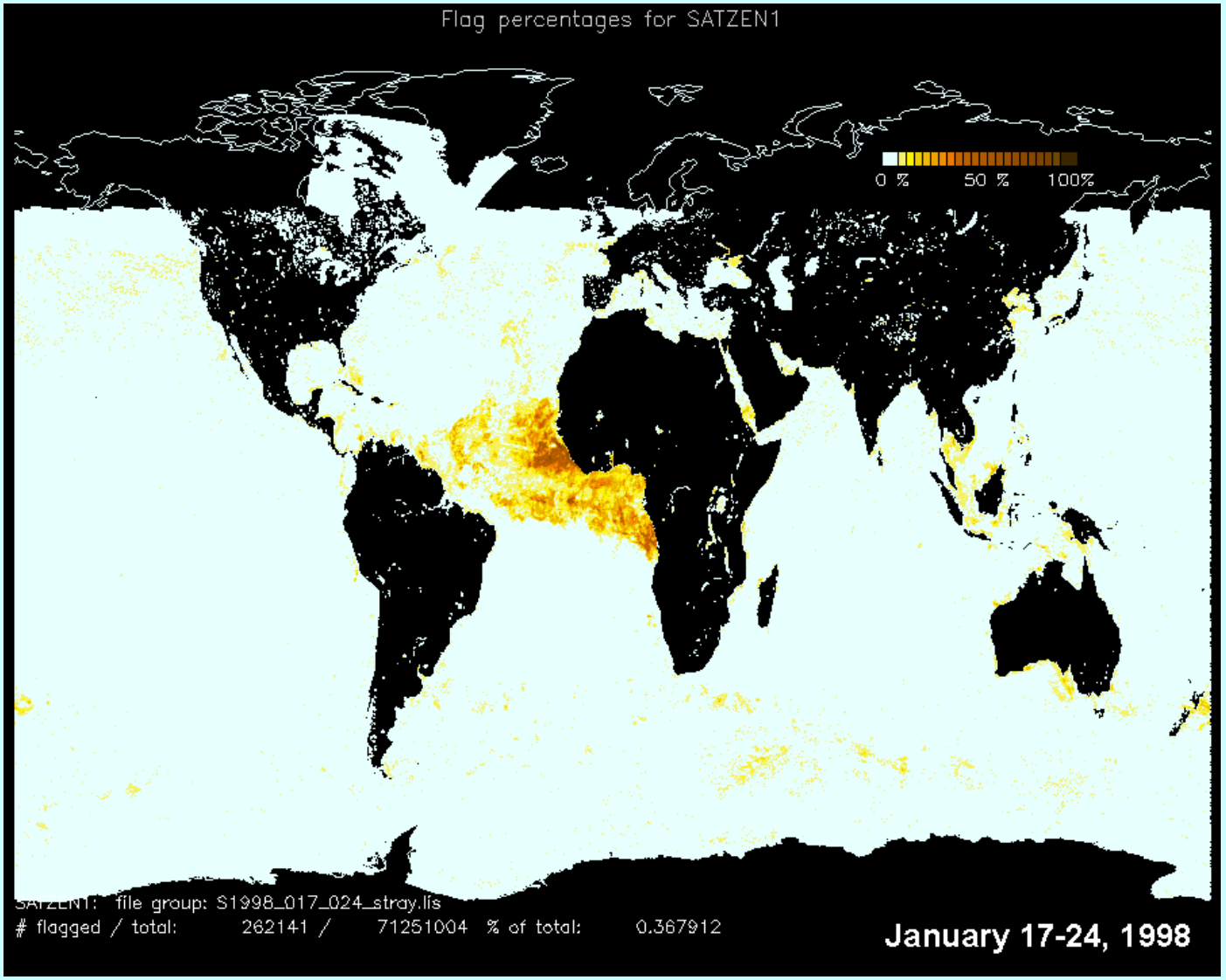


Smoke: Mexico True Color Mosaic

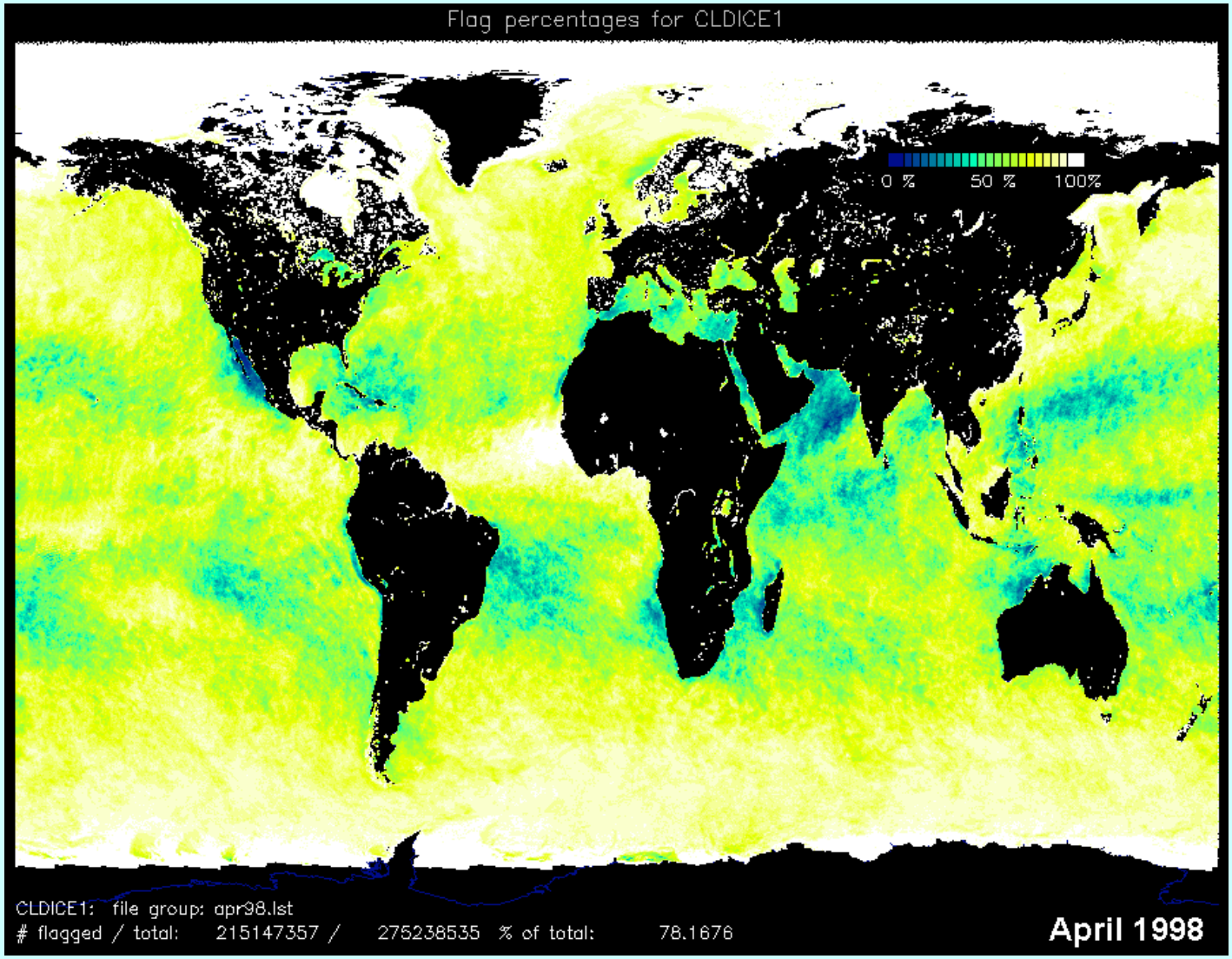


June 5, 1998

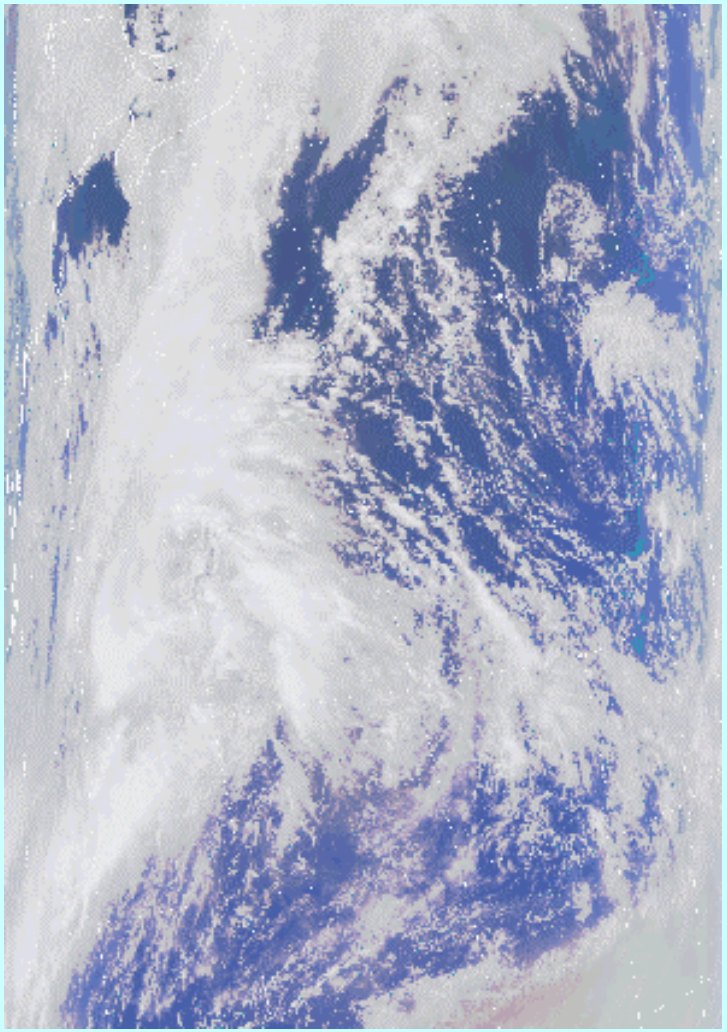
Absorbing Aerosol Index: Global 8-day Composite



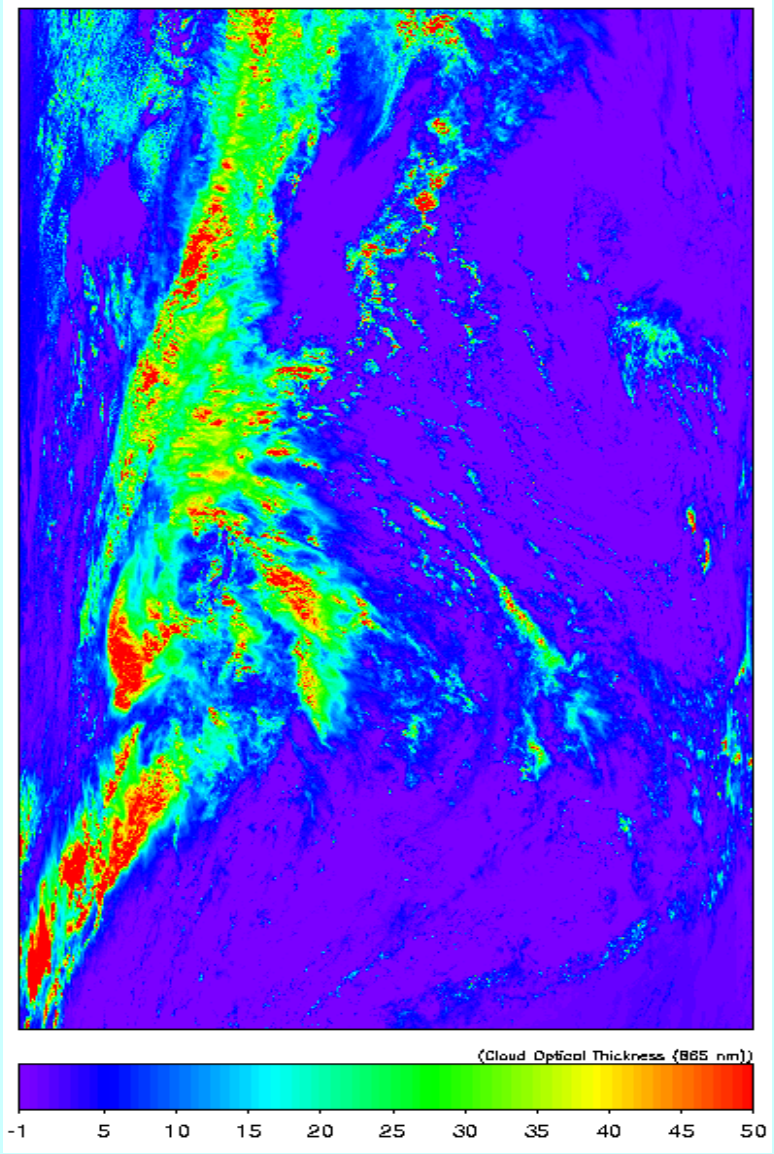
Cloud Fraction:
Global Monthly Composite



Cloud Optical Thickness



RGB radiance (Sep. 4, 1997)



Global Daily Mean PAR
Comparisons with Bermuda Atlantic Time Series